

## REFERENCE TO CROSS-RELATED APPLICATION

This application claims priority to provisional application No. 60/449,766, filed on February 24, 2003.

HV  
12/03/07

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The subject matter disclosed generally relates to the field of semiconductor lasers.

### 2. Background Information

Conventional laser diodes, which are fabricated from III-V compound semiconductors such as GaAlAs, InGaAlP and InGaAsP operate at wavelengths between 0.4 and 1.6  $\mu\text{m}$ . Longer wavelengths in the mid-infrared range between 2 and 10  $\mu\text{m}$  are required for important applications, including:

- Optical communications in the open atmosphere, which are highly vulnerable to scattering by fog and rain at conventional diode wavelengths shorter than 2  $\mu\text{m}$ . By contrast, the atmosphere is much more transparent to wavelengths around 10  $\mu\text{m}$ , where attenuation through fog can be as much as 150 db/km lower.